

What is claimed is:

1. A process for preparing MTBE having a purity of greater than 99.7% from technical grade MTBE by fractional distillation,
5 which comprises separating the technical grade MTBE into a low boiler fraction comprising MTBE, methanol and water, a middle fraction comprising MTBE in a
10 purity of greater than 99.7% and a high boiler fraction comprising TBA and butene oligomers.
2. The process as claimed in claim 1,
15 wherein the fractional distillation is carried out in at least two columns.
3. The process as claimed in claim 1 or 2,
20 wherein the fractional distillation is carried out in at least one dividing wall column.
4. The process as claimed in any of claims 1 to 3,
25 wherein the fractional distillation is carried out in a two-column system which consists of a main column and a side column, and the low boiler fraction is obtained as the top product and the high boiler fraction as the bottom product of the main column
30 and the middle fraction is purified in the side column to give the MTBE having a purity of greater than 99.7%.
5. The process as claimed in claim 4,
35 wherein the MTBE having a purity of greater than 99.7% is obtained as the top product of the side column.

6. The process as claimed in claim 4,
wherein
the MTBE having a purity of greater than 99.7% is
obtained as the bottom product of the side column.
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7. The process as claimed in any of claims 4 to 6,
wherein
the fraction of the side column which does not
contain the MTBE having a purity of greater than
99.7% is recycled into the main column.
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8. The process as claimed in any of claims 1 to 7,
wherein
the MTBE having a purity of greater than 99.7% has
a 2-methoxybutane content of less than 500 ppm by
mass.
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9. The process as claimed in any of claims 1 to 8,
wherein
the low boiler fraction is recycled into the
fractional distillation.
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10. The process as claimed in any of claims 1 to 9,
wherein
the high boiler fraction is recycled into the
fractional distillation.
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11. A process for preparing highly pure isobutene by
catalytically cleaving the MTBE having a purity of
greater than 99.7% prepared according to any of
claims 1 to 10.
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